

Implementation of the Merdeka Curriculum in Physical Education Learning at an Indonesian Elementary School

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Abstract. The implementation of the Merdeka Curriculum requires schools and teachers to adapt learning to students' characteristics, needs, and potential. In Physical Education, Sports, and Health (PJOK), this adaptation is particularly important because learning involves physical, cognitive, social, and affective development. This study aimed to examine the implementation of the Merdeka Curriculum in PJOK learning at SDN Ciasem II. A descriptive qualitative approach was employed involving the school principal, a PJOK teacher, and students as the primary informants. Data were collected through observations, interviews, and documentation and analyzed through data condensation, data display, and conclusion drawing. Data credibility was examined as part of the validation process. The findings showed that the Merdeka Curriculum had been implemented in PJOK learning through diagnostic assessment, student-centered activities, project-oriented learning, and formative and summative assessments. However, its implementation remained incomplete because teachers had limited understanding of the curriculum, limited references, and insufficient preparation in developing and applying Learning Outcomes (CP), Learning Objective Flow (ATP), and Teaching Modules. This study provides school-level evidence that effective Merdeka Curriculum implementation in PJOK requires stronger teacher competence, curriculum adaptation, and continuous professional support.

Key words: elementary school; Merdeka Curriculum; physical education; PJOK; teacher competence

Abstract in Indonesia. Implementasi Kurikulum Merdeka menuntut sekolah dan guru untuk menyesuaikan pembelajaran dengan karakteristik, kebutuhan, dan potensi peserta didik. Dalam pembelajaran Pendidikan Jasmani, Olahraga, dan Kesehatan (PJOK), penyesuaian tersebut penting karena pembelajaran mencakup perkembangan fisik, kognitif, sosial, dan afektif peserta didik. Penelitian ini bertujuan untuk menganalisis implementasi Kurikulum Merdeka dalam pembelajaran PJOK di SDN Ciasem II. Penelitian menggunakan pendekatan deskriptif kualitatif dengan kepala sekolah, guru PJOK, dan siswa sebagai informan utama. Data dikumpulkan melalui observasi, wawancara, dan dokumentasi, kemudian dianalisis melalui kondensasi data, penyajian data, dan penarikan kesimpulan. Kredibilitas data diuji sebagai bagian dari proses keabsahan data. Hasil penelitian menunjukkan bahwa Kurikulum Merdeka telah diterapkan dalam pembelajaran PJOK melalui asesmen diagnostik, pembelajaran yang berpusat pada siswa, pembelajaran berbasis proyek, serta asesmen formatif dan sumatif. Namun, implementasinya belum sepenuhnya optimal karena masih terdapat keterbatasan pemahaman guru, keterbatasan referensi, serta kurangnya kesiapan dalam mengembangkan dan menerapkan Capaian Pembelajaran (CP), Alur Tujuan Pembelajaran (ATP), dan Modul Ajar. Penelitian ini menunjukkan bahwa keberhasilan implementasi Kurikulum Merdeka dalam PJOK memerlukan peningkatan kompetensi guru, adaptasi perangkat pembelajaran, dan pendampingan profesional secara berkelanjutan.

Kata Kunci: kompetensi guru; Kurikulum Merdeka; pendidikan jasmani; PJOK; sekolah dasar

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INTRODUCTION

Education plays a fundamental role in developing human resources and preparing individuals to respond to social, cultural, and technological changes. As an essential component of national development, education contributes not only to the acquisition of knowledge but also to the formation of character, critical thinking, creativity, and social responsibility. The quality of education is closely related to the effectiveness of curriculum development and implementation, which determine how learning objectives are translated into meaningful educational experiences. Julaehe (2019) emphasized that curriculum development is inseparable from educational challenges and the need to strengthen students' character. Therefore, educational institutions must continuously improve their learning systems to accommodate students' diverse characteristics, interests, abilities, and developmental needs. In Indonesia, curriculum reform has become an important strategy for improving educational quality and

establishing a learning environment that encourages students to participate actively in their educational development.

The curriculum serves as a fundamental framework that guides educational objectives, learning materials, instructional strategies, and assessment procedures. Effective curriculum implementation requires collaboration among teachers, students, school administrators, and other educational stakeholders. However, curriculum reform is not merely a matter of introducing new educational policies; it also requires changes in teachers' pedagogical perspectives and classroom practices. Sulindawati (2018) highlighted the importance of educational elements in determining learning directions amid global developments. Similarly, Purnawan and Hidayati (2021) discussed the integration of technology into educational practices, illustrating the importance of adapting instructional approaches to changing educational environments. These perspectives suggest that curriculum implementation should be supported by appropriate teaching methods, adequate learning facilities, and continuous professional development. Consequently, teachers play a central role in transforming curriculum principles into effective learning experiences that respond to students' individual needs.

The introduction of the Merdeka Curriculum represents an important development in Indonesia's efforts to establish a more flexible, student-centered, and competency-oriented educational system. This curriculum provides opportunities for teachers and schools to organize learning activities according to students' characteristics, educational needs, and local potential. Unlike approaches that emphasize uniform instructional procedures, the Merdeka Curriculum encourages contextual learning, instructional flexibility, and the development of essential competencies. Andari (2022) examined the implementation of the Merdeka Belajar Curriculum through a learning management system, demonstrating the relevance of educational innovation in supporting curriculum implementation. Furthermore, Mardani et al. (2023) discussed the relationship between the Merdeka Curriculum and educational democratization, emphasizing the importance of flexibility and learner participation. These perspectives indicate that successful curriculum implementation requires educational institutions to provide meaningful learning opportunities while ensuring that instructional practices remain consistent with established curriculum objectives.

One of the essential principles of the Merdeka Curriculum is the recognition of differences in students' learning readiness, interests, and abilities. This principle encourages teachers to develop differentiated instructional strategies that accommodate diverse learning needs. Ningrum et al. (2023) discussed differentiated learning within the Merdeka Curriculum, highlighting its relevance to student-centered educational practices. In this context, teachers are expected to identify students' initial competencies, formulate appropriate learning objectives, select suitable instructional activities, and conduct assessments that support continuous learning improvement. These processes involve the interpretation of Learning Outcomes (*Capaian Pembelajaran*, CP), the development of Learning Objective Flow (*Alur Tujuan Pembelajaran*, ATP), and the preparation of Teaching Modules (*Modul Ajar*). However, the availability of curriculum documents does not automatically guarantee effective implementation. Teachers must understand how these components are interconnected and how they can be adapted to classroom conditions, student characteristics, and institutional resources.

Physical Education, Sports, and Health (*Pendidikan Jasmani, Olahraga, dan Kesehatan*, PJOK) is an important component of elementary education because it supports students' physical development, movement competence, health awareness, and social interaction. Unlike subjects that primarily emphasize cognitive achievement, PJOK integrates physical activities with cognitive, affective, and social learning experiences. Through developmentally appropriate movement activities, games, and sports, students can improve their motor skills, develop cooperation, practice discipline, and acquire healthy lifestyle habits. Therefore, PJOK learning requires instructional approaches that provide opportunities for active participation while considering differences in students' physical abilities, interests, and learning readiness. Within the Merdeka Curriculum, teachers have greater flexibility to design learning experiences that are relevant, engaging, inclusive, and responsive to the characteristics of elementary school students.

The implementation of the Merdeka Curriculum in PJOK presents opportunities to improve instructional quality through differentiated activities, contextual learning, and meaningful assessment. Teachers can adapt physical activities to students' developmental levels, available sports equipment, school environments, and local resources. However, these opportunities also create challenges related to curriculum understanding, instructional planning, assessment procedures, and professional

competence. Raibowo et al. (2019) examined PJOK teachers' understanding of professional competency standards, emphasizing the importance of professional knowledge in physical education instruction. More specifically, Ikhsan and Febrianta (2023) investigated elementary school PJOK teachers' knowledge regarding the implementation of the Merdeka Curriculum. Their research provides a relevant foundation for understanding the relationship between teacher competence and curriculum implementation. Nevertheless, teachers' knowledge must also be examined alongside actual instructional practices to determine how curriculum principles are implemented in specific school environments.

Previous studies have investigated various aspects of Merdeka Curriculum implementation across educational settings. Azzahra et al. (2023) examined its implementation in elementary school science and social studies learning, whereas Ningrum et al. (2023) discussed differentiated instruction in Islamic elementary education. Meanwhile, Deti et al. (2024) explored elementary school teachers' perspectives on assessment challenges associated with the Merdeka Curriculum and the 2013 Curriculum. These studies provide useful perspectives on instructional adaptation, assessment, and curriculum-related challenges. However, the literature considered in this study provides less detailed attention to how curriculum planning, classroom implementation, and learning evaluation interact within elementary school PJOK learning. In particular, examining teachers' understanding of CP, ATP, and Teaching Modules alongside their instructional practices may provide a more comprehensive understanding of implementation challenges in specific school contexts.

SDN Ciasem II provides a relevant setting for examining the implementation of the Merdeka Curriculum in elementary school physical education. The school has been adapting its instructional practices to the curriculum while addressing the need to align learning activities with students' characteristics and available educational resources. Understanding this implementation process requires attention to instructional planning, learning activities, assessment practices, and challenges experienced by teachers. Rather than evaluating curriculum implementation solely through formal administrative requirements, it is important to examine how curriculum principles are interpreted and applied in everyday physical education learning. Such an investigation can provide contextual insights into the relationship between curriculum expectations, teachers' professional readiness, and the practical conditions of elementary school education.

Accordingly, this study aims to analyze the implementation of the Merdeka Curriculum in PJOK learning at SDN Ciasem II, focusing on three interconnected aspects: learning planning, instructional implementation, and learning assessment. It also seeks to identify challenges affecting curriculum implementation, particularly those associated with teachers' understanding, instructional preparation, and available learning resources. By examining these aspects through a qualitative approach, this study is expected to provide a contextual understanding of curriculum implementation in elementary school physical education. Its contribution lies in integrating the analysis of curriculum planning, teaching practices, and assessment within a specific school setting. The findings are expected to provide practical considerations for improving teachers' curriculum competence, strengthening instructional preparation, and supporting more effective implementation of the Merdeka Curriculum in elementary school PJOK learning.

METHODS

This study employed a descriptive qualitative research approach to examine the implementation of the Merdeka Curriculum in Physical Education, Sports, and Health (PJOK) learning at SDN Ciasem II, Indonesia. A qualitative approach was selected to provide an in-depth understanding of curriculum implementation in its natural educational setting, particularly regarding instructional planning, learning implementation, assessment practices, and challenges encountered by teachers. The study focused on understanding participants' experiences and perspectives rather than measuring relationships between numerical variables.

The research participants included the school principal, the PJOK teacher, and fourth-grade students at SDN Ciasem II. These participants served as primary sources of information because of their involvement in curriculum implementation and learning activities. The principal provided information regarding school policies, curriculum preparation, and institutional support, while the PJOK teacher provided information about instructional planning, teaching practices, and learning assessment. Students

contributed information regarding their learning experiences and participation in PJOK activities.

Data were collected through observation, interviews, and documentation. Observations were conducted to examine the implementation of PJOK learning activities, including instructional procedures, student participation, and the use of available learning facilities. Interviews were conducted with the school principal, PJOK teacher, and students to obtain information regarding their experiences, understanding, and perceptions of Merdeka Curriculum implementation. Documentation was used to examine available curriculum-related materials and other relevant school records. The investigation focused on the application of Learning Outcomes (*Capaian Pembelajaran*, CP), Learning Objective Flow (*Alur Tujuan Pembelajaran*, ATP), and Teaching Modules (*Modul Ajar*) in instructional planning and implementation.

Data analysis involved three interconnected stages: data condensation, data display, and conclusion drawing. During data condensation, information obtained from interviews, observations, and documents was selected, organized, and categorized according to the research objectives. The condensed data were subsequently presented in descriptive form to identify patterns related to curriculum planning, learning implementation, assessment, and implementation challenges. Finally, conclusions were drawn by interpreting the relationships among the identified themes and the overall research findings.

Data credibility was examined by comparing information obtained from the different data sources and collection techniques to identify consistencies and discrepancies in the findings. The analysis was conducted systematically to provide a comprehensive description of Merdeka Curriculum implementation in elementary school PJOK learning.

RESULTS AND DISCUSSION

Implementation of the Merdeka Curriculum in Physical Education Learning

The implementation of the Merdeka Curriculum in Physical Education, Sports, and Health (*Pendidikan Jasmani, Olahraga, dan Kesehatan*, PJOK) at SDN Ciasem II was examined through instructional planning, learning implementation, and assessment practices. These interconnected components provide a comprehensive perspective on how curriculum principles are interpreted and applied in elementary school physical education. The findings indicate that the school had initiated the implementation of the Merdeka Curriculum, although several aspects required further development, particularly teachers' understanding of curriculum requirements, preparation of instructional documents, and adaptation of learning activities to students' characteristics.

Based on interviews and observations involving the school principal, PJOK teacher, and students, the Merdeka Curriculum had been implemented in grades I, II, IV, and V during the research period. This condition reflected a gradual transition toward a more flexible and student-centered learning approach. The implementation involved adjustments in instructional preparation, teaching practices, and assessment procedures. However, the findings suggest that the adoption of curriculum principles had not yet been accompanied by equally consistent improvements across all components of instructional practice.

These findings are consistent with Rahayu et al. (2022), who examined the implementation of the Merdeka Curriculum in *Sekolah Penggerak* and identified the importance of teachers' and school leaders' willingness to adapt to educational changes. Similarly, Sumarsih et al. (2022) highlighted the relationship between curriculum implementation, school leadership, and the development of student-centered instructional practices. Research by Nurhasanah et al. (2024) further demonstrated that elementary schools may progress through different stages of curriculum implementation, with some components developing more rapidly than others. These studies suggest that curriculum adoption should be understood as a gradual institutional process rather than an immediate transformation of classroom practices.

In the context of physical education, curriculum implementation requires teachers to integrate educational objectives with students' motor development, learning motivation, and social interaction. The findings at SDN Ciasem II indicate that the school had introduced diagnostic assessment, student-centered activities, and character-oriented learning. Nevertheless, challenges remained in aligning these practices with curriculum planning documents. Similar implementation patterns were reported by Badriyah et al. (2024), Lacksana et al. (2024), and Zen and Saputro (2024), who examined the implementation of the Merdeka Curriculum in physical education and identified challenges related to

teacher readiness, instructional preparation, and curriculum adaptation. Therefore, the implementation of the Merdeka Curriculum at SDN Ciasem II represents an ongoing process of educational adjustment. Although the school had begun incorporating curriculum principles into PJOK learning, further improvement was necessary to establish stronger connections between curriculum objectives, instructional activities, and assessment practices.

Planning of Physical Education Learning

Instructional planning plays a fundamental role in curriculum implementation because it determines how learning outcomes are translated into educational objectives, activities, and assessment procedures. Within the Merdeka Curriculum, teachers are expected to develop learning plans that accommodate students' learning readiness, interests, abilities, and developmental characteristics. Effective planning requires teachers to interpret Learning Outcomes (*Capaian Pembelajaran*, CP), develop Learning Objective Flow (*Alur Tujuan Pembelajaran*, ATP), and prepare Teaching Modules (*Modul Ajar*) that reflect students' needs and the educational environment.

The findings revealed that SDN Ciasem II used diagnostic assessment as an initial consideration in instructional planning. Based on interviews with the school principal and PJOK teacher, diagnostic assessment was intended to identify students' existing knowledge, interests, and learning abilities before instructional activities were organized. This practice reflects an effort to accommodate individual differences among students. In physical education, identifying students' initial conditions is particularly important because students may demonstrate different levels of movement competence, physical confidence, motivation, and previous experience with physical activities.

The relevance of diagnostic assessment is supported by Wijaya et al. (2024), who investigated its implementation among elementary school physical education teachers in Gunungpati, Semarang. Their study found that teachers' understanding of diagnostic assessment did not always correspond to its application in classroom practices. This comparison suggests that conducting an initial assessment should be distinguished from systematically using the assessment results to develop differentiated learning activities. Research by Ningrum et al. (2023) also emphasized differentiated learning as an important component of the Merdeka Curriculum, particularly in accommodating students' educational characteristics.

However, the findings at SDN Ciasem II revealed limitations in the preparation and development of curriculum documents. Learning Outcomes were obtained from official government resources, while ATP and Teaching Modules were adopted from materials provided by the ministry rather than independently developed and contextualized by teachers. Referring to official curriculum resources is appropriate as an initial step because Learning Outcomes provide a nationally established framework. Nevertheless, effective instructional planning requires teachers to interpret these outcomes and adapt learning objectives, activities, and assessment procedures to the specific educational context.

This finding is comparable to Lacksana et al. (2024), who investigated PJOK learning in elementary schools in Sumowono District and identified limitations in teachers' readiness to prepare instructional materials. Similarly, Azzahra et al. (2023) examined the implementation of the Merdeka Curriculum in elementary school learning, providing relevant context for understanding curriculum adaptation at the school level. Alhayat et al. (2023) further identified instructional planning, implementation, and assessment as interconnected components of effective curriculum practice. These studies indicate that teachers' ability to interpret curriculum requirements is essential for developing meaningful instructional experiences.

The school principal encouraged teachers to develop instructional documents that reflected the characteristics and potential of SDN Ciasem II. This encouragement represents an important form of institutional support. Isa et al. (2022) examined the role of school principals in implementing the Merdeka Curriculum and emphasized leadership in supporting teachers' professional development. Likewise, Oktaviani and Ramayanti (2023) highlighted the importance of school readiness, teacher preparation, and educational facilities in curriculum implementation. These findings demonstrate that instructional planning is influenced not only by individual teacher competence but also by the support provided within the school environment.

In PJOK learning, contextual planning is particularly important because instructional activities depend on available equipment, learning spaces, time allocation, and students' physical characteristics. The findings indicated that SDN Ciasem II possessed sports equipment and digital resources that could

support learning activities. However, the availability of these resources does not automatically guarantee effective instruction. Teachers must determine how the resources can be used to support learning objectives and provide appropriate opportunities for student participation.

The importance of adapting curriculum principles to everyday teaching practices can also be understood through the work of Zweeris et al. (2023), who examined curriculum orientations within teachers' everyday practices. Their perspective highlights the need to understand curriculum implementation as an interaction between educational goals and actual instructional decisions. Consequently, the planning challenges identified at SDN Ciasem II suggest that further attention should be directed toward teachers' ability to connect official curriculum documents with practical PJOK learning activities.

Instructional planning at SDN Ciasem II demonstrated initial efforts to implement student-centered principles through diagnostic assessment. Nevertheless, the development of contextual ATP and Teaching Modules remained an important area for improvement. Strengthening teachers' curriculum literacy and instructional design competence could support more systematic preparation and improve the alignment between learning outcomes, teaching activities, and assessment.

Implementation of Physical Education Learning Activities

The implementation of the Merdeka Curriculum in PJOK involves translating instructional plans into meaningful learning experiences that support students' physical, cognitive, affective, and social development. Physical education provides opportunities for students to develop movement competence, cooperation, responsibility, discipline, and healthy lifestyle awareness. Consequently, learning activities should provide appropriate challenges while accommodating differences in students' abilities and developmental characteristics.

The findings from observations and interviews indicated that PJOK learning at SDN Ciasem II generally followed three instructional stages: introduction, core activities, and lesson closure. These stages were similar to those implemented under the previous curriculum. However, the Merdeka Curriculum introduced greater emphasis on student participation, instructional flexibility, and character development.

Comparable findings were reported by Badriyah et al. (2024), who examined PJOK learning at SD Al Madina Wonosobo and identified instructional activities organized through introductory, core, and concluding stages. Farida and Supriyono (2024) also investigated physical education learning under the Merdeka Curriculum in elementary schools and highlighted the importance of teachers' knowledge, skills, and attitudes in supporting curriculum implementation. These studies indicate that curriculum reform does not necessarily require abandoning established instructional structures. Instead, changes may be reflected in the objectives, learning strategies, and student participation within those structures.

Before learning activities began, teachers at SDN Ciasem II provided explanations of the material. The findings also indicated that CP, ATP, and Teaching Modules were not explicitly presented to students. However, this should not be interpreted as direct evidence that teachers failed to use these documents, because curriculum planning documents primarily guide teachers rather than function as materials that must be displayed to students. A more appropriate evaluation concerns whether instructional activities were systematically connected to learning outcomes and objectives.

During PJOK lessons, students were provided opportunities to explore learning activities according to their abilities and characteristics. This approach reflects an effort to promote student-centered learning and accommodate individual differences. Research by Dudley et al. (2022), through a systematic review and meta-analysis of physical education interventions, demonstrated that pedagogical approaches can influence students' psychomotor, cognitive, affective, and social learning outcomes. Their findings support the importance of designing physical education activities according to clearly defined educational objectives rather than focusing exclusively on physical participation.

Student-centered learning may also support motivation and engagement when teachers provide appropriate opportunities for participation and autonomy. Fernández-Espínola et al. (2020) examined cooperative learning interventions in physical education and their effects on students' intrinsic motivation. Tendinha et al. (2021) reviewed the effects of the Sport Education Model on student motivation and reported generally positive motivational outcomes. These studies provide an empirical basis for considering cooperative and student-centered approaches in physical education. Nevertheless, the present research did not directly measure students' motivation, so improvements in motivation

cannot be claimed as demonstrated outcomes at SDN Ciasem II.

The implementation of student-centered learning also requires teachers to select appropriate instructional strategies. Jaitner et al. (2019) examined achievement-goal motivation in school physical education, providing a perspective on the relationship between motivational conditions and learning experiences. Meanwhile, Raibowo et al. (2019) investigated PJOK teachers' understanding of professional competency standards, emphasizing an aspect of teacher competence that is relevant to instructional effectiveness.

Another important aspect of learning implementation at SDN Ciasem II concerned the incorporation of character development associated with the Pancasila Student Profile. The findings indicated that the school had introduced project-oriented and character-related learning principles. Such activities are relevant to the Merdeka Curriculum because students are expected to develop competencies and personal characteristics through meaningful learning experiences.

Rahmawati et al. (2023) examined the implementation of the Merdeka Curriculum in elementary school learning and illustrated how project-based activities could support the development of Pancasila Student Profile dimensions. Similarly, Mardani et al. (2023) discussed the relationship between the Merdeka Curriculum and educational democratization, emphasizing opportunities for greater student participation. These perspectives suggest that meaningful learning activities should provide students with opportunities to participate actively and develop competencies beyond memorizing instructional content.

Nevertheless, the available research data do not describe specific PJOK projects, student products, or indicators used to assess character development at SDN Ciasem II. Therefore, the findings support the conclusion that character-oriented learning principles had been introduced, but they do not establish the extent of students' character development.

The implementation of inclusive and flexible learning also requires teachers to consider individual differences. Najib et al. (2024) examined PJOK learning in inclusive elementary schools and identified difficulties in adapting instructional planning and implementation to students with special educational needs. Herlina et al. (2023) similarly investigated teachers' needs when implementing the Merdeka Curriculum for students with disabilities, emphasizing the importance of curriculum adaptation, assessment guidance, and institutional support. Although the present study did not specifically investigate inclusive education, these findings highlight the importance of ensuring that flexibility in PJOK learning accommodates different student characteristics.

Overall, the implementation of PJOK learning at SDN Ciasem II reflected initial progress toward student-centered and character-oriented instruction. However, the effectiveness of these practices should be assessed through their alignment with curriculum objectives, instructional preparation, and appropriate learning assessment rather than solely through their presence during classroom activities.

Assessment of Physical Education Learning

Learning assessment constitutes an essential component of the Merdeka Curriculum because it provides information about students' learning progress and the achievement of educational objectives. In physical education, assessment should reflect the multidimensional nature of learning, including knowledge, movement competence, attitudes, and participation. Therefore, assessment practices should be appropriately connected to instructional objectives and provide information that teachers can use to improve learning activities.

The research manuscript describes formative and summative assessments as components of PJOK learning evaluation. Summative assessment was associated with evaluating students' knowledge, attitudes, and skills, whereas formative assessment focused on monitoring students' learning processes and providing information for instructional improvement. These approaches serve complementary purposes because formative assessment supports ongoing learning, while summative assessment summarizes achievement at particular stages of instruction.

However, an important limitation should be acknowledged. The original manuscript identifies a different school in the paragraph discussing formative and summative assessment. Consequently, the assessment findings attributed to SDN Ciasem II require confirmation from the original interview transcripts, observation records, or school documents before they can be treated as verified evidence from this research.

From a pedagogical perspective, the distinction between formative and summative assessment is particularly important in physical education. Macken et al. (2020) investigated primary preservice teachers' use of assessment for learning in physical education and identified challenges associated with applying assessment knowledge in authentic teaching situations. Similarly, Ní Chróinín and Cosgrave (2013) examined teachers' experiences of formative assessment in primary physical education, providing evidence relevant to understanding the practical demands of assessment implementation. These studies indicate that effective assessment involves more than selecting assessment categories; it also requires appropriate instructional decisions, observation procedures, and feedback.

The relevance of assessment competence is further supported by Deti et al. (2024), who examined elementary school teachers' perspectives on assessment challenges associated with the Merdeka Curriculum and the 2013 Curriculum. Their findings identified difficulties related to adapting assessment practices to changing curricular expectations. Wijaya et al. (2024) reported similar concerns in elementary school physical education, where teachers' knowledge of diagnostic assessment did not consistently translate into its implementation. These comparisons suggest that teachers require continuous support in developing assessment procedures aligned with learning objectives.

Diagnostic assessment should also be connected to formative assessment during the learning process. Information about students' initial learning conditions may help teachers identify appropriate instructional activities, while formative assessment can provide feedback about whether those activities support students' progress. Within PJOK, assessment may involve observing movement performance, understanding of movement principles, participation, and cooperation. However, such indicators must be selected according to the learning outcomes and objectives being assessed.

Research conducted by Baihaqi and Mu'arifin (2025) examined PJOK teachers' understanding of Merdeka Curriculum implementation in elementary schools in Pasuruan Regency. Their findings provided information about teachers' understanding of planning, learning implementation, assessment, and reflection. The study also identified challenges related to the Pancasila Student Profile, suggesting that curriculum implementation requires attention to both learning outcomes and broader character-related competencies.

The implementation of assessment also depends on teachers' ability to interpret curriculum requirements. Andari (2022) discussed the implementation of the Merdeka Curriculum through a learning management system, providing a perspective on the relationship between curriculum innovation and educational technology. Although digital resources may facilitate documentation and assessment management, their effectiveness depends on teachers' capacity to use them appropriately. Therefore, strengthening assessment competence at SDN Ciasem II should involve improving teachers' understanding of assessment objectives, procedures, and the interpretation of student learning evidence.

Taken together, these studies suggest that effective PJOK assessment requires systematic alignment among learning outcomes, instructional activities, assessment instruments, and feedback. Further examination of assessment documents and actual teaching practices at SDN Ciasem II would help establish how consistently these components were implemented.

Challenges in Implementing the Merdeka Curriculum

Despite the efforts made by SDN Ciasem II to implement the Merdeka Curriculum, several challenges were identified during the research. The primary challenges concerned teachers' limited understanding of curriculum principles, insufficient instructional preparation, and limited references supporting curriculum implementation. These challenges affected the school's ability to translate curriculum expectations into consistently planned and implemented learning activities.

Teachers' understanding represents a critical factor because curriculum reform introduces changes in instructional planning, teaching methods, and assessment. Ikhsan and Febrianta (2023) examined elementary school PJOK teachers' knowledge regarding the implementation of the Merdeka Curriculum, highlighting the importance of curriculum literacy in physical education instruction. Pranandi et al. (2025) similarly investigated physical education teachers' understanding of the Merdeka Curriculum and identified the need to strengthen pedagogical competence, instructional resources, and professional preparation. These findings provide relevant comparisons with the challenges identified at SDN Ciasem II.

The findings indicated that teachers had not independently developed ATP and Teaching Modules according to the school's specific educational context. Instead, existing resources provided by the

ministry continued to serve as the primary references. Although these resources can support the initial implementation process, teachers must also possess the competence to adapt instructional materials to students' needs, available facilities, and learning objectives.

Similar challenges were reported by Arwiyanti et al. (2023), who examined elementary school teachers' readiness to implement the Merdeka Curriculum and identified limitations associated with facilities, teacher preparation, and instructional resources. Wantiana and Mellisa (2023) also investigated teachers' difficulties in implementing the curriculum and highlighted insufficient preparation, limited guidance, and dependence on existing learning resources. These studies suggest that teachers' readiness involves both conceptual understanding and practical instructional competence.

Another challenge concerned teachers' ability to adapt established instructional routines to new curriculum expectations. Husna and Rigianti (2023) identified difficulties associated with the transition from the 2013 Curriculum to the Merdeka Curriculum, including instructional planning, teaching methods, technology use, and assessment. Jannah et al. (2023) similarly investigated elementary school teachers' adaptation to the Merdeka Curriculum and found that adjustment processes did not always result in the expected changes in instructional practices. These findings indicate that curriculum implementation requires continuous professional adaptation rather than simple compliance with new administrative requirements.

The difficulties identified at SDN Ciasem II can also be compared with research focusing specifically on physical education. Tyas et al. (2024) investigated Merdeka Curriculum implementation in junior high school PJOK learning and identified challenges associated with differentiated instruction, assessment, and adaptation of learning media. Chrisbinawan et al. (2024) examined curriculum implementation across junior high schools in Bringin District and identified differences in implementation stages. Although these studies involved a different educational level, they suggest that curriculum readiness and instructional adaptation can vary among schools.

Furthermore, the availability and effective use of educational technology should be considered in curriculum implementation. Purnawan and Hidayati (2021) discussed the application of electronic and mobile learning in an educational setting, while Mutia et al. (2023) examined teachers' readiness to respond to technological developments. These studies indicate that technological resources should be accompanied by the competence necessary to integrate them into learning activities. In the context of PJOK, digital resources may support instructional explanations, documentation, and assessment, but they cannot replace the need for appropriate practical learning experiences.

The findings also highlighted the role of school leadership in supporting curriculum implementation. The principal of SDN Ciasem II encouraged teachers to develop contextual teaching materials. This effort reflects an understanding that teachers require institutional support to adapt curriculum requirements to school conditions. Wardhani and Kiptiyah (2024) examined teachers' readiness to implement the Merdeka Curriculum and emphasized the importance of professional training and institutional support. Aprilia and Mustika (2024) similarly investigated teachers' roles in implementing the curriculum and identified challenges associated with instructional flexibility and limited educational facilities.

The importance of professional support is also reflected in research by Rahman (2023), who examined physical education teachers' readiness to implement the Merdeka Curriculum in elementary schools. Beni et al. (2022), through their investigation of teachers' implementation of meaningful physical education, provided an additional perspective on the organizational and professional factors influencing instructional change. These studies reinforce the argument that successful curriculum implementation requires teachers to develop professional competence within supportive educational environments.

Therefore, the challenges identified at SDN Ciasem II should not be interpreted exclusively as individual teacher limitations. They also highlight the importance of curriculum guidance, professional learning opportunities, instructional resources, and institutional collaboration. Strengthening these components could improve teachers' ability to translate curriculum principles into coherent PJOK learning experiences.

Implications for Physical Education and Curriculum Development

The findings of this study provide important considerations for improving Merdeka Curriculum implementation in elementary school physical education. The central implication concerns the

relationship between curriculum flexibility, teachers' professional readiness, and the systematic alignment of instructional planning, implementation, and assessment.

First, strengthening curriculum-based instructional planning should become a priority. Teachers need sufficient understanding of CP, ATP, and Teaching Modules to ensure that instructional activities are connected to clearly defined learning objectives. Rather than functioning exclusively as administrative requirements, curriculum documents should guide teachers in selecting appropriate activities, modifying instruction, and evaluating learning progress.

Second, teachers should be supported in developing differentiated physical education instruction. Ningrum et al. (2023) emphasized the relevance of differentiated learning to the Merdeka Curriculum, while Lacksana et al. (2024) identified the importance of student-centered instruction in elementary school PJOK. These findings suggest that teachers should consider students' movement abilities, learning readiness, interests, and educational needs when organizing physical activities. Such considerations may contribute to more inclusive and meaningful learning experiences.

Third, assessment practices should be systematically connected to learning outcomes and instructional objectives. Formative and summative assessments should provide information about students' progress and achievement while supporting improvements in subsequent learning activities. Research by Macken et al. (2020), Ní Chróinín and Cosgrave (2013), and Deti et al. (2024) provides a basis for emphasizing the importance of assessment competence and appropriate feedback within educational practice.

Fourth, institutional support should be strengthened through professional development and teacher collaboration. The school principal's encouragement to develop contextual instructional materials represents an initial effort to support curriculum adaptation. However, effective implementation may require opportunities for teachers to discuss curriculum documents, share instructional experiences, and develop practical learning resources. Rahayu et al. (2022), Isa et al. (2022), and Wardhani and Kiptiyah (2024) provide relevant evidence concerning the importance of school leadership and professional readiness in curriculum implementation.

Fifth, curriculum implementation should be evaluated as a continuous process. Rohim and Rigianti (2023) investigated obstacles faced by fourth-grade teachers in implementing the Merdeka Curriculum, emphasizing the need to understand practical implementation challenges. Similar concerns were identified by Wantiana and Mellisa (2023) regarding insufficient preparation and limited instructional references. These studies suggest that curriculum evaluation should examine not only whether a school has adopted the curriculum but also how consistently its principles are applied.

The contribution of the present study lies in its integrated examination of instructional planning, learning implementation, and assessment within a specific elementary school PJOK setting. Previous studies have addressed particular dimensions of curriculum implementation, including teacher knowledge, instructional readiness, assessment, and learning adaptation. The present investigation brings these components together to describe their relationships within SDN Ciasem II.

The findings reveal an important distinction between adopting the Merdeka Curriculum and implementing its principles systematically. At SDN Ciasem II, diagnostic assessment, student-centered learning activities, and character-oriented instruction indicated initial progress toward curriculum implementation. Nevertheless, limited adaptation of instructional documents and challenges in teachers' understanding suggested that implementation remained incomplete.

These findings should be interpreted within the boundaries of a qualitative investigation conducted in a single elementary school. They provide contextual insights rather than statistical generalizations concerning Merdeka Curriculum implementation throughout Indonesia. Furthermore, conclusions regarding assessment implementation require confirmation from the original school-specific research records. Effective implementation of the Merdeka Curriculum in elementary school PJOK requires an integrated approach involving curriculum literacy, instructional preparation, differentiated learning, appropriate assessment, and continuous institutional support. Strengthening these components may contribute to more coherent, inclusive, and meaningful physical education learning experiences.

CONCLUSION

The findings of this study indicate that the Merdeka Curriculum has been implemented in Physical Education, Sports, and Health (PJOK) learning at SDN Ciasem II, although several aspects still require

improvement. Curriculum implementation was reflected in instructional planning, learning activities, and assessment practices that emphasized student participation and the accommodation of individual learning characteristics. Learning planning incorporated diagnostic assessments to identify students' initial abilities, interests, and learning needs. However, the development and adaptation of curriculum components, particularly Learning Outcomes (*Capaian Pembelajaran*, CP), Learning Objective Flow (*Alur Tujuan Pembelajaran*, ATP), and Teaching Modules (*Modul Ajar*), had not been fully optimized. Learning activities demonstrated efforts to promote student-centered instruction, flexibility, and character development in accordance with the principles of the Merdeka Curriculum. Furthermore, formative and summative assessments were employed to evaluate students' learning processes and achievements. Despite these efforts, the implementation process continued to face challenges, particularly teachers' limited understanding of curriculum requirements, insufficient instructional preparation, and limited access to relevant learning references. These findings highlight that successful curriculum implementation requires not only the adoption of educational policies but also teachers' professional competence and the ability to adapt instructional practices to students' needs and school conditions. This study contributes to understanding Merdeka Curriculum implementation by examining the interconnected roles of instructional planning, learning implementation, and assessment in elementary school physical education. Therefore, strengthening teacher professional development, improving curriculum-based instructional planning, and providing continuous institutional support are essential for promoting more effective, contextual, and sustainable implementation of the Merdeka Curriculum in PJOK learning.

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